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ABSTRACT

The strategy for attaining the objectives of the Appalachia Preschool Education Program was the development of a child-centered, home-oriented program to be delivered by means of television broadcasts, home visitation, mobile classrooms, and other media. It involved building a curriculum based on behavioral objectives and preparing materials and methods particularly appropriate for 3-, 4-, and 5-year-olds living in rural Appalachia. A timetable was set up to carry the program through a 5-year period. The planning period was from October 1967 to August 1968; field-testing began in September 1968 and was completed in May 1971; and all final reporting is to be completed by May 1972. The Curriculum Materials Team set up natural groupings of objectives and from them developed units of work and an allocation of the time to be devoted to the units. All curriculum materials (e.g., tapes, children's worksheets, parent guides, mobile classroom guides) were produced by the Curriculum Materials Team. "Around the Bend," the television element, was a 30-minute broadcast aired 5 days a week from the end of September until mid-May. The home visitors were 8 women recruited from the area in which they worked. Their effort was directed toward helping the parent help the child. The mobile classroom was staffed by a professional preschool teacher and an aide. Ten locations were visited each week by the mobile classroom. The document provides a program description and a summary of results of the research carried on by the project. (LS)

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THE APPALACHIA PRESCHOOL EDUCATION PROGRAM:

A HOME-ORIENTED APPROACH

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The Appalachia Preschool Education Program:

A Home-Oriented Approach

Introduction

The well-being and wholesome development of the individual during infancy and early childhood years is recognized by an increasing number of psychologists and educators as crucial. The importance of training in the formative years is predicated on the assumption that there is a high positive correlation between formalized preschool training and later performance in school and in society. The widespread acceptance of this hypothesis is clearly demonstrated by the nation's investment in Head Start. Additional evidence is contained in the many proposals, from Montessori[1] to Bloom[2], for early educational intervention into the lives of culturally disadvantaged children.

The traditional way for meeting this need in the past has been to establish public kindergartens. These have generally been limited to urban and suburban areas, however, and no state or section in the United States has provided an adequate program of preschool education to rural children. Neither has any of them begun preschool education for children under age five, although it is known that educational nurture should begin at an earlier age.

Two conclusions that may be drawn are that conventional kindergartens are not providing adequate preschool education for all of the children

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[1]Fred M. Hechinger, Ed., Pre-School Education Today, Doubleday and Company, Inc., New York, 1966, pp. 58-60.

[2]Lester D. Crow et al, Educating the Culturally Disadvantaged Child, David McKay Company, Inc., New York, 1966, pp. 118-119.

of America who need early formal training to enhance their chances for success in life and that an alternative program for providing preschool education at an earlier age and to rural children needs to be developed.

Such an alternative program is needed especially in Appalachia where the population is largely rural and where publicly supported kindergartens are not available for the most part. (Four of the six states in the region of the Laboratory at the time of its establishment had no provision for publicly supported preschool education.) In addition, poverty and cultural deprivation strike deep in Appalachia, and many children caught in its pockets of social poverty have been doomed to lifelong separation from opportunities the outside world of America increasingly values as the inherent right of every child. The adults in the life of the average Appalachian child cannot provide sufficient means of escape because they themselves are victims of the same incapsulation.

The two factors cited above--the persisting cultural deprivation of Appalachia and the importance of early years to later development--first prompted selection of early childhood education as a priority endeavor of the Laboratory. It was evident that separation of Appalachian children from the opportunities afforded by a preschool education was an obstacle to their wholesome development and well-being and had an accumulative debilitating effect on performance in school. Enrollment figures for kindergartens across the nation provided further evidence that young children in the region continue to be shortchanged in an era when enriched environments are generally considered essential. While eligible children in the United States as a whole were enrolled on a better than 50 percent basis in kindergartens in

1966-67, eligible children in West Virginia were enrolled on a less than 4 percent basis.[3]

Strategy

The strategy for the achievement of the objectives of the Appalachia Preschool Education Program has been the development of a child-centered, home-oriented program to be delivered by means of television broadcasts, home visitations, mobile classrooms, and other media. It has involved building a curriculum based on behavioral objectives and preparing materials and methods particularly appropriate for children of three, four, and five years of age living in rural Appalachia.

The physical constraints of Appalachia were factors which influenced selection of the strategy. Isolated schools (532 one-room schools in the region in 1967) in remote sections of a sparsely populated and mountainous region and a primitive road system precluded establishment of conventional classroom-oriented kindergartens common in urban areas. Further, funds are not available for this approach; and even if they were, prepared teachers are not available (67 certified preschool teachers in West Virginia in 1969). The establishment of such kindergartens would require a ten percent increase in teaching staff and a ten percent increase in classroom space, equipment, and auxiliary services. More importantly, however, the traditional design does not include instruction of three and four-year old children and thus does not

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[3]These proportions are based on the following facts. There were an estimated 4,713,000 first grade children and an estimated 2,513,000 kindergarten children enrolled in the United States in 1966-67. There were 42,691 first grade children and 1,634 kindergarten children enrolled in West Virginia. (Renetzky, A. and Kaplan, P. A., Editors, Standard Education Almanac 1968, Academic Media, Inc., Los Angeles, 1968, p. 146 and 1966-67 Educational Statistical Summary, West Virginia Department of Education, State Superintendent of Free Schools, Charleston, West Virginia, pp. 40, 197, and 204.)

provide sufficiently the readiness training required for first graders entering school.

Another factor influencing the selection of the strategy was the presence of a television set in over 90 percent of the homes in Appalachia. Most preschool children in these homes watch television several hours a day, with 80 percent watching two hours or more.[4] It was assumed they could be guided into viewing and participating in instructional broadcasts.

Parents, even those with low aspirational levels, usually want their children to have better opportunities than they have experienced. On the basis of their participation in Head Start, it was assumed that these parents would maintain schedules and participate in learning activities beneficial to their children if stimulated in the effort by home visitors.

Since the research community had shown renewed interest in early childhood education in recent years, it was possible for the Laboratory to find information useful in its developmental effort. This included work completed and in progress on Head Start; activities of research and development centers such as the University of Georgia's Center for the Stimulation of Early Learning; the resources of the National Laboratory for Early Childhood Education and its affiliates, such as the Demonstration and Research Center for Early Education at George Peabody College for Teachers; and the research done by Deutsch, Bloom, Segal, Piaget, Bereiter, and others.

The Laboratory program will provide preschool training without the constraints imposed by the traditional approach. In both the traditional

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[4]Frank H. Hooper and William H. Marshall, The Initial Phase of a Preschool Curriculum Development Project, Final Report, Morgantown, West Virginia, 1968, pp. Q-27, Q-29.

approach and the one proposed, the objective is to facilitate development in language, cognition, psychomotor, and orienting and attending skills. The unique difference of the Appalachia Preschool Education Program is the method of linking teacher and learner. It will serve essentially the same number of preschoolers with the same number of personnel but will alter the roles and responsibilities of personnel by delivering the programs via television, mobile facilities, and paraprofessionals.

Preliminary Planning

A time-table was set up to carry the program through a five-year period. It provided for almost one year of preliminary planning, three years of field testing and demonstration, and a final year of data analysis, assessment of results, and report writing.

The planning period was from October, 1967, to August, 1968; the field testing began in September, 1968, and will continue through May, 1971; and all final reporting is to be completed by May, 1972. This schedule allowed for one group of children to participate in the full three-year program, beginning as three-year olds and finishing as five-year olds.

During the planning period a contract was negotiated with West Virginia University which provided for the preparation of three items: a literature survey, an assessment of characteristics of rural preschool children in Appalachia, and a set of objectives, written in behavioral terms, suitable to the target population.

The survey of the literature disclosed that much attention had been given to inner-city, disadvantaged preschoolers and to urban or suburban middle-class kindergarten pupils, but very little was known about the rural child. In order to conduct a study of the characteristics of the rural

preschool child in Appalachia, a sample of 160 children in Monongalia and Upshur Counties of West Virginia was selected. One group was rural farm and the other rural nonfarm as defined by the United States Census Bureau. The findings of this survey provided the following information: The family in rural Appalachia is basically stable and intact. Ninety percent of the homes had both the father and mother present. Negroes amounted to about eight percent of the total population, which is near the West Virginia average. About 45 percent of the parents fell in the 11th and 12th grades as the highest grade completed. About 60 percent owned their own homes. The income of approximately 68 percent of the families was below $4,000 per year. The aspiration of the parent for the child in school was higher than their own accomplishment. Sixty-five percent want their child to finish college, but this is not attainable in West Virginia at the present time. Currently less than 30 percent are completing college. One portion of the survey asked how often the child was read to by others. If the child was a first child he was read to by almost 85 percent of the parents. The incidence of reading for the second child dropped to about 40 percent, and the third child was read to in only 12 percent of the cases responding.

A second portion of the West Virginia University survey was an intellectual assessment. The instruments used in this assessment were the Peabody Picture Vocabulary Test, the Stanford-Binet Intelligence Test, Kagan's Matching From Familiar Figures Cognitive Tasks, Kagan's Draw a Line Motor Inhibition Tests, the Illinois Test of Psycho-Linguistic Ability, the Frostig Developmental Test of Visual Perception, and for the five and one-half and six and one-half-year-old children only, a series of Piagetian Tasks. The summary statement is as follows: "This initial assessment reveals a picture of

cultural diversity rather than uniform cognitive intellectual deficits. These deficits tend to center upon verbal tasks or those problem settings which demand symbolic representation."

On the Peabody Picture Vocabulary Test, the IQ scores were below the national average at every age level, particularly so for the females in the sample. On the Stanford-Binet, the IQ of all age groups was in the normality range. In every comparison the child was more likely to pass performance type items than verbal items. On the Frostig, performance on figure, ground and form constancy was notably weak. Dr. Frostig considers these tasks particularly relevant to reading readiness. On the Illinois Test of Psycho-Linguistic Ability there are nine theoretically distinct subtests. In the auditory vocal sequential subtest, the auditory decoding, and the visual decoding subtests, performance was considered adequate. On two association tasks there appeared to be intermediate difficulty. The coding tasks, visual motor sequential tasks, and auditory vocal automatic tasks, revealed the greatest deficits and also showed increased decrement with age. On the Piagetian tasks, performance was quite adequate for the age range which was five and one-half to six and one-half years. Males were superior to females on all conservation tasks at both age levels.

Finally, a basic curriculum expressed in terms of behavioral objectives was written for the guidance of the people who would be implementing the program. These objectives were divided into cognitive skills, language skills, psychomotor skills, and orienting and attending skills. It was understood that this list would be subject to revision, addition, and deletion as the project continued.

Concurrent with the work being done by West Virginia University, the staff of AEL was engaged in finding the people, the place, and the facilities required to implement the program.

The place sought for the field test was one which would (a) be typical of rural Appalachia, geographically, economically, and in population pattern; (b) have local school people interested in seeing an innovative preschool program in their area; and (c) be served by a local television station willing to cooperate on the necessary broadcasts. Such an area was found in southern West Virginia in the counties of Raleigh, Fayette, Summers, and Mercer.

A survey of five television facilities was made in the search for suitable production capabilities. A contract was signed with WSAZ-TV of Huntington, West Virginia, to use its Charleston studio. This contract provided for office space, studio space, videotape recording equipment, and technical personnel to operate the equipment. Technical equipment and personnel are available two hours per day on a set schedule.

A specially designed mobile classroom was ordered from a manufacturer in early July, 1968. Due to procurement difficulties, this unit did not begin operation until early February, 1969.

It had been decided that a high degree of correlation between components would be required to make the program most effective, and the way to achieve this correlation would be to have all curriculum planning and materials designed and produced by one group of people. A five-member Curriculum Materials Team was assembled to begin work on July 1, 1968.

The field test began in September, 1968.

Program Operation

The Curriculum Materials Team sets up natural groupings of objectives and from them builds up units of work and an allocation of the time to

be devoted to the unit. It then decides on a theme to use as a vehicle for presenting and teaching these objectives. Each person on the Team has his or her own responsibility to one element; however, the group works closely together to maintain correlation. For example, the person writing the home visitation materials knows what has occurred on the television program for any given day. A poem used on television may be printed and sent to the home or to the mobile classroom. The Curriculum Materials Team produces all of the curriculum materials--tapes, children's worksheets, parent guides, mobile classroom guides, etc.

At first the Curriculum Materials Team was guided by the information provided about Appalachian preschoolers in the West Virginia University research. This helped to determine level of concepts to be presented, emphasis to be placed on various skills, and so on. However, a feedback loop had been built into the design so that after only a very short period of time it was possible to incorporate actual observations of children into the planning process.

"Around the Bend", the television element, is a 30-minute broadcast which is on the air at 9:30 a.m. five days a week from the end of September until the middle of May. This period of time was selected to conform to a school year, since it is anticipated that eventually local school systems will be administering the program.

Patty Hughes, on-camera teacher, is not presented as a teacher. Instead, she is a friend who invites the young children into her home where she talks to them about things of interest to them.

Film shot on location allows Patty and the children to explore other places together, such as an airport or a library. The broadcasts are not

"teachy", but are designed so that the child has fun as he explores new ideas and new things.

This is not to say that preschool activities are overlooked. Some of the concepts explored include large and small, same and different, classification, seriation, numbers and numerals, and letters. There also are rhythmic activities, body movement, sounds, textures, and weather.

Participation by the children is encouraged, both physical and mental, and feedback from the homes indicates that participation is enthusiastic on the part of most of them. Questions are asked and children respond. Activities are demonstrated and then Patty and the children perform them together.

The home visitors are eight women who were recruited from the area in which they were to work. The requirements specified that the applicants were to be 20 years of age or older, hold a driver's license, have a car available to them, and be a high school graduate or equivalent. The eight home visitors we employed ranged age from twenty to sixty, in education from General Educational Development Diploma to two years of college, and in previous work experience from housewife to substitute teacher and Head Start aide.

The home visitors were given three weeks of intensive training before beginning their duties. The first two weeks were provided by a consultant from the National College of Education who had had previous experience in training Head Start aides and similar paraprofessionals. Time was spent on child development, particularly for the relevant ages to this project and to teaching techniques and materials for preschool children. The third week was devoted to sensitivity training, particularly interview techniques and acceptance of conditions as they are found. The sensitivity training was provided by Psycho-Dynamics, Inc.

The first thing that paraprofessionals had to do was to recruit the sample. In order to do this they were assigned a certain territory to survey for preschool children. Thus, the initial contact with the home was made by the paraprofessionals and has been maintained through them. Parents with preschool children were asked if they would like to have their children participate. Less than five percent declined. From those who were agreeable, a sample was selected and the program got under way with the home visitors making a weekly visit of approximately one-half hour each. Their effort is directed toward helping the parent help the child. In order to do so they pursued three activities.

The first relates directly to the television broadcast. During their weekly visit they explain the theme of the coming week's episodes and tell the mother of items which the child will need in order to participate. These may be household items, such as buttons or acorns for counting, or they may deliver an item not usually found at home, such as finger paint, and remind the mother to spread out lots of newspapers. There may also be a sheet prepared by the Curriculum Materials Team which pictures the three bears which mother needs to cut out so the child can have samples of large and small as Patty talks about the concept.

Secondly, the home visitors provide a set of suggestions for games or activities which complement the TV episodes but are not dependent on them. These are aimed at the same set of objectives but are intended for use at any time during the week. These are also produced by the Curriculum Materials Team.

As a third facet to the job, the home visitors are adults interested in children. As such, they provide a strong motivation for the mother to

maintain her interest in the child and to follow through on activities. They also provide a broadened horizon for the child. In many instances they are the only adult other than family members to visit the home during the week.

In addition, the home visitor is the prime source for feedback for the team. Each day she watches the TV broadcast with a child in order to make a direct observation. During the remainder of her visits, she talks with the mother and child about their reactions to the program and reports these to the Curriculum Materials Team. Each home visitor sees approximately 30 mothers per week.

Designing the mobile classroom was a four-stage process. A consultant with experience in designing mobile facilities of many types, a professor from Pennsylvania State University, was employed by AEL. He drew up the basic design and specifications. His design was then submitted to a panel of early childhood people who made several suggestions which were incorporated into a second version. The Curriculum Materials Team suggested certain items to be included in order to implement program ideas which were felt to be important. Finally, the chief designer for a firm engaged in the manufacture of such equipment drew a final design which incorporated features required by sound engineering practices. Construction followed this final design.

The facility is an 8 feet x 22 feet box on a truck; overall length is 28 feet. Inside it is fully carpeted, electrically heated, air conditioned, contains its own water supply, and has a chemical toilet. All the furniture is child sized--low tables, small chairs, low sink--in other words, a custom designed unit for children. It is colorfully decorated so that it is a pleasant place to be.

The mobile classroom is staffed by a professional preschool teacher and an aide. They have at their disposal a complete audio visual unit, a cooking area, chalk board and bulletin board, cabinet space, bookshelves, a sound-activated colored light display, and books, toys, and games galore.

Into this setting is introduced a group of 10 to 14 children for one and one-half hours per week. There are individual activities, group activities, a snack time, and each activity is aimed toward the same group of objectives that the other two elements of the program have for that week. The Curriculum Materials Team prepares the list of objectives and some suggested activities and the mobile classroom teacher working within this framework draws upon her own professional skills to provide a group experience which is educational, interesting, and fun for the children.

Ten locations are visited each week by the mobile classroom. It is driven by the teacher or her aide and is attached by them to a power supply at a centrally located spot--a church lot, school yard, or community center. The parents bring the children and pick them up later. Many walk, some come in pickup trucks, and some in a Cadillac.

Research Design

It was theorized that learning experiences might be provided to rural preschool children through a home-oriented program employing three elements: television broadcasts, home visits, and traveling classrooms. The curriculum for such a program might be based on a set of behavioral objectives appropriate to children of a given age level.

It was hypothesized that there would be differences displayed in the behaviors of children receiving the home-oriented preschool program as compared to the behaviors of children not receiving such a program. It was

expected that the combination of the three elements would be shown to be more effective than the combination of television and home visits, and that either combination would be more effective than television alone. Further, it was predicted that there would be evidence that a home-oriented program would be an effective approach to providing a preschool program to rural children.

To test the hypotheses a research design of four treatments was drawn up. The treatments were:

Treatment I (T_1) - Intervention through a daily television broadcast, a weekly visit by a paraprofessional, and a weekly visit to a traveling classroom.

Treatment II (T_2) - Intervention through a daily television broadcast and a weekly visit by a paraprofessional.

Treatment III (T_3) - Intervention through a daily telelvision broadcast.

Treatment IV (T_4) - No intervention.

The variables of age and sex were controlled so that there would be nearly equal numbers of boys and girls and nearly equal numbers of three-, four-, and five-year-old children. Ages were computed as of the birthday preceding November 1, 1968.

The sample consisted of not fewer than four children within each cell, with a cell defined by age (three, four, or five), sex (male or female), and treatment (T_1, T_2, T_3, or T_4).

Because the nature of two elements of the intervention r l extensive travel, it was necessary to restrict the area to be covered by the program. Coverage was thus restricted to all of Mercer, Raleigh, and Summers Counties and to that portion of Fayette County south of Oak Hill, West Virginia. It was also necessary to work with clusters of children, so a cluster sampling technique was used.[5]

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[5]W. Allen Wallis and Harry V. Roberts, Statistics: A New Approach Brooklyn: The Free Press, Inc., 1956, p. 489.

Large scale maps of the area, prepared by the West Virginia State Road Commission, were secured. These maps were marked in grids approximately four miles east and west and five miles north and south. All grids containing incorporated cities or towns were eliminated from consideration, as were grids containing no public road (state and national parks occupy a portion of the area). The remaining grids were numbered consecutively from one to forty-one. Fifteen grids were randomly selected, and five each were randomly assigned to three treatment groups, T_1, T_2, and T_3. On September 2, 1968, surveys were initiated to identify the preschool children of the appropriate ages within each of the fifteen grids. During the survey, less than five per cent of the parents with children eligible to participate declined to do so.

In one of the grids a kindergarten program financed by a special grant was found to be in operation. This grid was discarded in favor of one adjacent to it but outside the attendance area of the kindergarten.

Almost 750 prospective enrollees were located. After these children were listed by age, sex, and treatment, a random sample was drawn for participation in the program. There were 25 children in each cell, making a total of 150 in a treatment group.

Because of the extensive testing planned, a smaller sample was randomly selected from each group of 25. A minimum of four in each small sample cell was considered necessary, so six were selected to allow for sample attrition.

Giles County, Virginia, was selected as a site for the control area. It was outside the viewing area of WOAY-TV and did not have kindergarten classes in its rural sections. From a school census report a random sample

of 26 subjects, stratified to three age levels and two sex levels, was drawn for the control (T_4) group.

Full information was collected on 121 subjects. Table I provides further information on the distribution of subjects in the small sample.

TABLE I

THE SAMPLE BY AGE, SEX, AND TREATMENT

Elements		Age 3		Age 4		Age 5		Total
		Boys	Girls	Boys	Girls	Boys	Girls	
T_1	TV; HV; TC	6	6	6	4	6	6	34
T_2	TV; HV	4	6	4	5	5	5	29
T_3	TV	6	6	5	5	6	4	32
T_4	None	4	4	4	5	5	4	26
N=121		20	22	19	19	22	19	

A comparison was made between the sample used for the West Virginia University assessment of characteristics and the sample drawn for field test purposes. There are very few differences between the original West Virginia University study and the field test sample The field test sample tends to live in villages more often and have slightly higher incomes. The children tend to watch less television and go more places. The children have gone to department stores, banks, and around town more often than the original study group, but not to zoos, museums or the beach.

A higher percent of the parents expect their child to graduate from college and go to graduate school. Rank ordering of statements about life gives a .94 co-relation between all groups.

Opinionnaire statements (eight in number) showed the only distinct difference between groups. Unfortunately the results were not reported for the West Virginia University group, and therefore all comparisons have been between ECE groups. Of the total 42 statements, 34 have high intercorrelation between .92 and .94 depending on the group. Eight statements did differ. The T_1 group closely correlates with the T_2 group on five of the statements and with no one on one. The T_2 group does not correlate with the T_3 group on any of the eight statements. Five of the statements dealt with learning in the home and the mother's role. These were the only questions relating to that topic. One question dealt with mothers being lonely. A comparing question (asking the same information) showed no difference between groups.

Summative Evaluation

Approximately 450 children were enrolled in the program in September of 1968. This number consisted of 50 children aged 3, 4, and 5 and in three treatment groups. These groups were formed purely for the purpose of evaluating each of the program components, not to form independent units. One group viewed the television program, (T_3), the second viewed the television program and received weekly visits from a paraprofessional, (T_2), and the third group received weekly visits from the mobile facility as well as the other two program components, (T_1). Of these 450 children a sample of approximately 100 was chosen from random in geographic grids in the program area. A control group of approximately 35 children was selected from an area which did not receive any of the three program components.

In the September, 1968, pretest, children in all four groups were measured in three basic areas. First, intelligence--as measured by the Peabody Picture Vocabulary Test; second, psychomotor skills--as measured by the

Frostig; and third, psycholinguistic skills--as measured by the Illinois Test of Psycholinguistic Abilities. There was no direct measure of learning resulting from the program. However, such a curriculum specific test was devised during the program year and administered post-test in June, 1969. This is the only direct measure of learning directly attributable to the program. The standardized measures which are used are much more tangential to the program's objectives.

Analysis of the 1968-69 data was done primarily with gain scores to measure growth during the program year. No distinct pattern of growth emerged from the first year's data. The trends which were found were not linear or additive. The group visited by the paraprofessional produced gains in most areas which were as large as those produced by the children who visited the mobile classroom, while the group which received only the television program showed relatively smaller gains. The curriculum specific measure seemed to divide the children into two groups--those who received visits from the paraprofessional and those who did not, especially in terms of specific cognitive skills.

More exactly, the children in the treatment group samples showed a very large variance on all gain scores, but particularly so on I.Q.'s. The curriculum specific measure indicated that the group which received visits from the paraprofessional achieved approximately 70 percent of the program objectives after one year, in contrast with the control group which achieved less than 50 percent of those objectives. This figure for the control may be extraneously high since the control sample also showed a mean I.Q. score gain of 33 points over a nine month period. Since these children were not exposed to any remedial program, it seems likely that the sample may have been extremely biased or the testing situation itself may have been inadequate.

The ITPA showed gains for the television/home visitor group and mobile classroom group in those areas most closely related to program objectives, such as verbal fluency and the ability to make coherent descriptive statements about physical objects. Other areas, such as short-term memory, did not show any consistent pattern of gain.

The Frostig showed significant gains for the mobile classroom group in the area of figure-ground and embedded figure discrimination, both of which are skills thought to be highly related to reading readiness.

The analysis of the 1969-70 program year emphasized testing a larger number of children, about 270, with a somewhat reduced testing battery. In addition, trained testers were used instead of the home visitors who did the testing previously. A post-test only design was used for a preliminary analysis of the June, 1970, data. A control group was selected, but tended to have substantially higher I.Q.'s than children in the treatment groups, and probably reflects a biased sample. Data has been received from a control group from northern West Virginia which will be substituted for that from the presumably biased sample.

Preliminary analysis of the 1969-70 data shows the same trend to significantly higher scores for individuals receiving visits from the paraprofessional when compared to the control group or to children who viewed the television program only. This is especially true in those areas most closely related to program objectives as measured by the curriculum specific test. Although no substantial differences were found between the treatment group I.Q.'s (they all fell in the low to middle 90's), the control group achieved a mean I.Q. score which was approximately 20 points higher than the treatment groups. It is of interest that although they had significantly higher I.Q.'s,

the control group did not obtain a correspondingly high score on the curriculum specific measure.

In summarizing the findings of the past two years' program efforts, it can be said that the home visitor is probably the most important part of the program in promoting cognitive growth. In her work with both mother and child, she not only provides a model for the child's speech patterns and encourages his participation in the program activities, but also influences the mother and thus changes the reinforcement contingencies toward more learning experiences in the home.

It has also been found that the television program in itself provides only the substance for cognitive and affective learning which is reinforced by the home visitor, and that the mobile classroom provides the social skills necessary for the child's personal development and the opportunity to further his learning in a group situation.

In the final year of evaluation of the program, the sample size will be enlarged and comparisons will be made with traditional kindergartens and a control group which is equivalent in all important respects to the treatment group.

Perhaps one of the greatest problems experienced in evaluating the effects of the Early Childhood Education Program is the inability to measure more than cognitive change. Approximately 30 percent to 40 percent of the current year's television programming is devoted to affective objectives, which are aimed at enhancing the child's self concept. Growth in this area is extremely difficult to measure in a reliable or valid manner.

A second major problem is inherent in the nature of the program's development efforts. Since the program is constantly changing and growing, it is difficult to develop a set of measures which will adequately reflect

all of the major curriculum objectives before they have been incorporated in the body of the program. This makes the traditional pre- post-test design very difficult.

Essentially, evaluation problems center around those aspects of the program which make it most effective and viable--its relevance to the whole child, and its basically dynamic and changing nature.

Social Skills Evaluation

A preliminary attempt was made to measure social learning skills in the T_1 and T_2 treatment groups through interaction analysis in a task oriented situation. A possible contribution of the mobile classroom in the ECE project was the opportunity it provided for children to learn from association with other children.

Logistics of the Study: The first step was to devise a standardized situation in which children would have an opportunity to demonstrate these skills. It became evident from observing children in kindergartens and nursery schools that social learning skills were most easily observed when small groups of students were working on a task with little or no teacher involvement. Among several tasks which were field tested, a task which involved placing model furniture in a model house was selected as the task which would most stimulate the occurrence of behaviors that facilitate the process of learning in group situations. Small groups of children were asked to place furniture in the model house and their different activities were video taped for 20 minutes, or until completion of the task.

A sample of 144 subjects was selected for the social skills testing. One condition which was imposed on the sampling was that four members who were strangers of the same age would be in each group. The design called for two

all male groups, two all female groups, and two mixed groups at each of the three age levels and in each of the two treatment groups. Some of the children were absent from the video taped session due to sickness or other reasons and, therefore, 104 subjects participated in the social skills testing. Fifty-four of the children were in the T_1 sample, and 50 children were in the T_2 sample.

The second step was to develop a systematic observation of behavior based on three considerations. The considerations were that information regarding the more important social learning skills would be provided; that all behavior would be accounted for in mutually exclusive categories; and that the children's behavior could be coded with a high degree of reliability. The observational system consisted of 28 categories for social skill measurement. Some examples of the categories are "Initiates antagonistic action", "Requests assistance verbally of peer", "Shows nonverbal enthusiasm", and "An antagonistic verbal response to an antagonistic peer statement/action". Approximately every three seconds a coder recorded the category that best described the activities of the previous three seconds. This process continued for the length of time the session lasted.

Findings of the Study: The T_1 and T_2 groups were compared on the 28 categories on the basis of expected frequencies. The T_1 groups initiated both constructive and antagonistic behavior, more often than expected. The T_1 group tended to ask more questions of peers than the T_2 group. Listening to the teacher or responding to her, however, was more characteristic of the T_2 group. This finding was consistent with the observation that the T_2 group had more tendency to seek security. The T_2 group gave more "help on own initiative" than the T_1 group. Seemingly contrary to what one might expect, such findings might

be interpreted as the T_2 child's greater sensitivity to his peers' needs. The T_2 groups, which felt more need for security, might have tended to render the same help which they felt they needed on certain occasions. On the other hand, the T_1 child might have been accustomed to the situation in the mobile classroom whereby each had an individual task to perform, or when in a group, the teacher was with them--a situation which would not directly promote desire to help. The T_1 group was much less withdrawn. The T_2 child withdrew from group activity either to work alone or for security. The T_1 group showed more enthusiasm, although sometime during the task session some members of the T_1 group became bored and stopped working on the project.

The two groups had about the same frequency of tallies for "a non-antagonistic verbal response to a nonantagonistic peer statement/action". Responses to an antagonistic peer statement/action had frequencies higher than expected for the T_1 group, and lower than expected for T_2. In breaking down these responses into antagonistic or nonantagonistic, verbal or nonverbal the frequencies for the T_1 group still exceeded those for the T_2 group. Such results might indicate that the T_1 subjects were more responsive than the T_2 subjects in a task-oriented group situation.

Formative Evaluation

Formative evaluation was undertaken within each of the three components of the Early Childhood Education Program. It involved the administration of bi-weekly tests to measure the extent to which objectives were reached, feedback to the home visitors and mobile classroom teacher regarding the nature and effect of their patterns of verbal interaction, and a systematic observational system to measure viewer reactions to each segment of each television broadcast.

The bi-weekly tests indicated what specific objectives needed more emphasis or required a different approach. This resulted in re-teaching particular objectives on another television program (if needed), and additional material for home use and added emphasis by the home visitors was often appropriate.

The home visitors watched a television program each morning with a child and used an observational system to record the children's responses to the broadcast. This system allowed measurement of individual reactions to each segment of the program.

The data showed that three-, four-, and five-year-old viewers were most enthusiastic when the programs involved animals, mysteries, activities involving both the television teacher and the viewer, activities in which the television teacher expressed strong emotions like happiness, surprise, and wonderment. Girls were slightly more enthusiastic about programs viewed during the 1969-70 school year than were boys. More overt enthusiasm was exhibited by the four-year-old group than any other age group, and five-year-old boys were least enthusiastic of all. Yet, the average number of overt behaviors indicating enthusiasm was 8.4 for each of the programs produced last year, which is an increase of three expressions of overt behavior over a sample of the best programs produced during the first year.

One important objective of the television program was to establish a strong personal relationship between the television teacher and the viewer. The fact that viewers responded to over 75 percent of her questions and suggestions (as opposed to a 59 percent response rate for the best of the television programs during the first year) was an indication that this objective was being achieved. Inspection of the data indicated that one of the most

effective ways of asking a question was to switch from a full view of the teacher to a closeup of her face looking directly into the camera just as she started to ask the question. The question was followed by a short pause during which the teacher had a look of hopeful, almost excited, expectation on her face. A statement of feedback, such as "Right, it is a monkey", was made immediately after the pause.

Parental and Pupil Attitudes

Parental and pupil attitudes were ascertained through a questionnaire sent to the parents and through analysis of reports returned by the home visitors.

A questionnaire designed to compare parents' attitudes toward the Early Childhood Education television program, Around the Bend, and other children's programming was designed by the Laboratory. It was mailed from West Virginia University to control bias due to association with AEL. The three treatment groups were the parents of (1) children who received the television program only, (2) children who received the television program and a home visitor, and (3) children who experienced the television program, the home visitor, and the mobile facility (package group). The parents were requested to rate Captain Kangaroo, Romper Room, and Around the Bend as the best, next best, and worst. Sesame Street was not available in the area. A representative sample of 105 parents included 35 parents from each of the three treatment groups, and 81 percent of the questionnaires were returned.

A parent-child attitude checklist was completed by the home visitor each week from September, 1969, until June, 1970, on a randomly selected sample of 70 families which she would normally visit. The checklist consisted of ten questions measuring attitudes on a five-point scale. A

weekly mean was computed on each of the questions for each group and a combined grand mean was calculated separately for all questions pertaining to parents and children. Each of these grand means was placed on a graph at the end of the program year to trace changes in involvement over the previous nine months period.

As summarized in Table II, 74 percent of the T_2 group ranked Around the Bend first, which was well above Captain Kangaroo (22 percent) and Romper Room (4 percent). Both the T_1 and T_3 groups rated Around the Bend and Captain Kangaroo approximately equal with about 40 percent of the first-place ratings for each program.

TABLE II

Percent of First Choice Preferences for Around the Bend Captain Kangaroo, and Romper Room by Treatment Groups

Treatment Group	N	Around the Bend	Captain Kangaroo	Romper Room
Package Group	33	39.39%	48.48%	12.12%
TV-Home Visitor Group	27	74.07	22.22	3.70
TV-Only Group	25	41.66	41.66	16.66

The home visitor report analysis indicated that parent and child involvement was high in both the groups measured, with parental interest remaining consistently higher than the children's. Both groups showed very high levels of interest at the beginning and end of the program year with lower ratings before the Thanksgiving and Christmas holidays.